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A24C 5/52

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None

(58) Field of search
UK CL (Edition L) A2C CGMA CGMB CGMC CGMX
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(54) Device for forming double filter-tipped cigarettes

(57) A device (2) for forming double filter-tipped cigarettes (6) on a filter assembly machine (1), whereby a succession of double cigarette portions (4), housed inside respective seats (11) formed on a roller (9) defining a path (P) perpendicular to the longitudinal axis of the double portions (4), are each cut transversely into two single portions (16), which are engaged by respective gripping heads (19) and parted axially along the seat (11) for enabling insertion inside the seat (11) of a double filter (14).

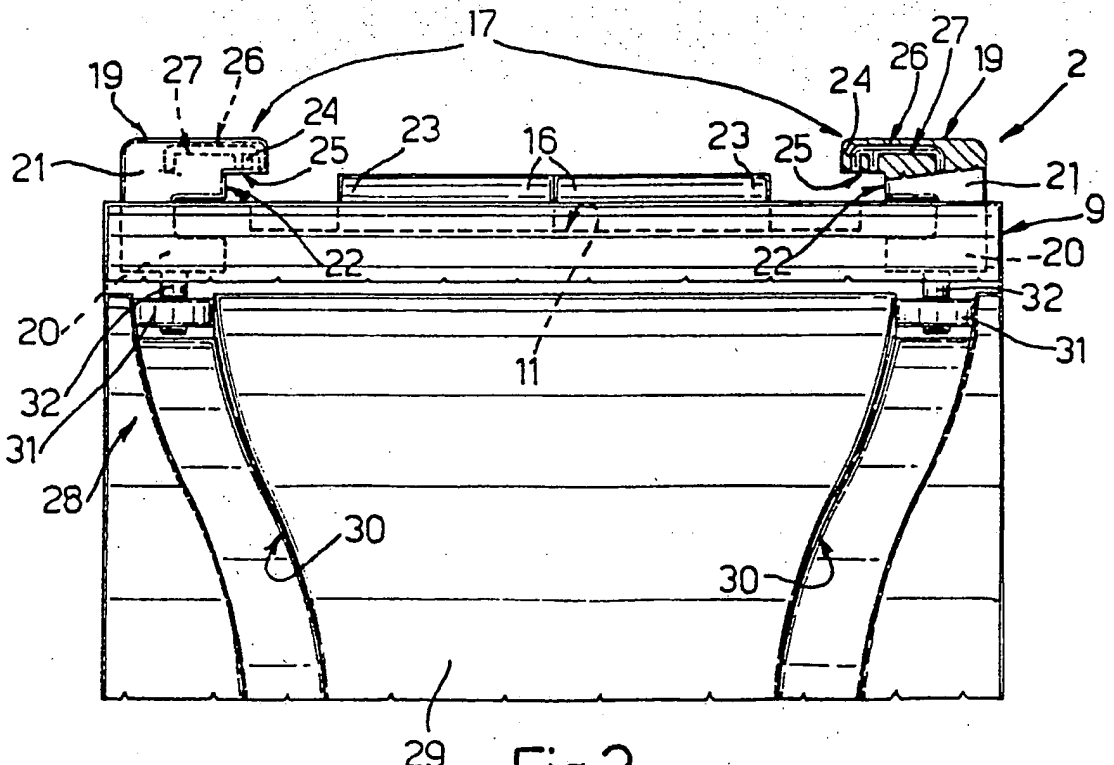

Fig.2

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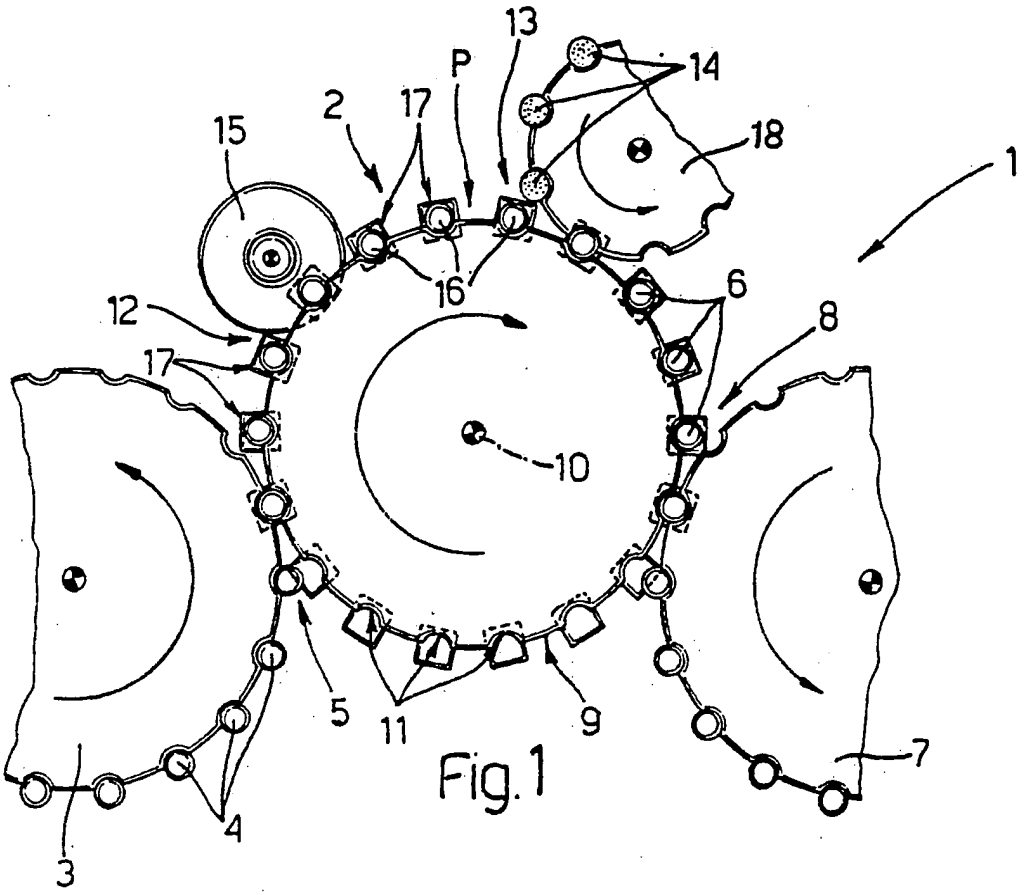
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Fig.1

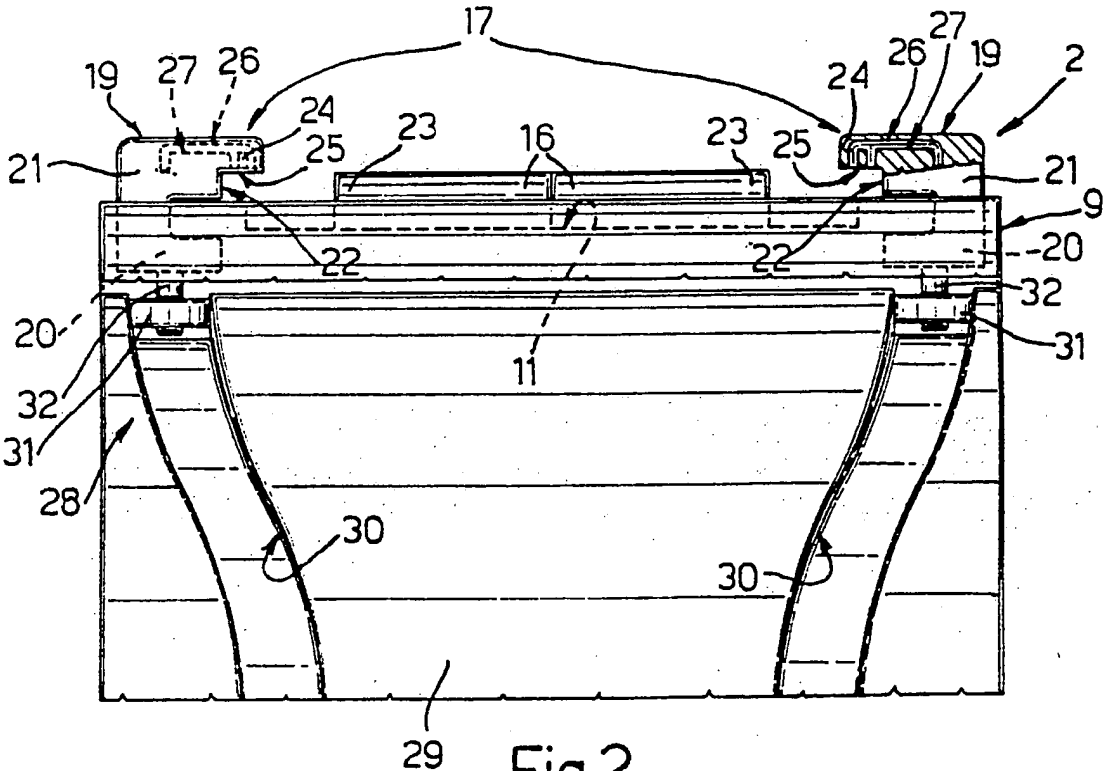
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Fig.2

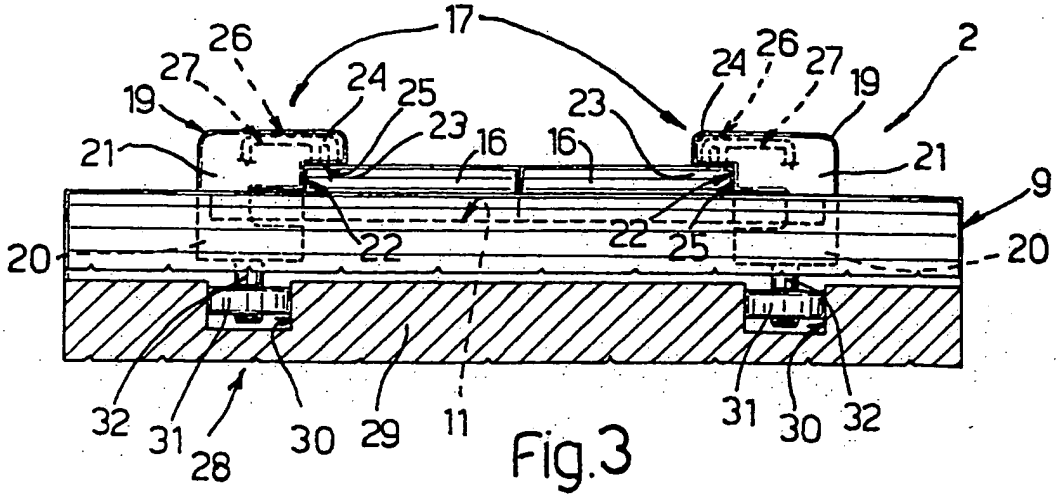

Fig.3

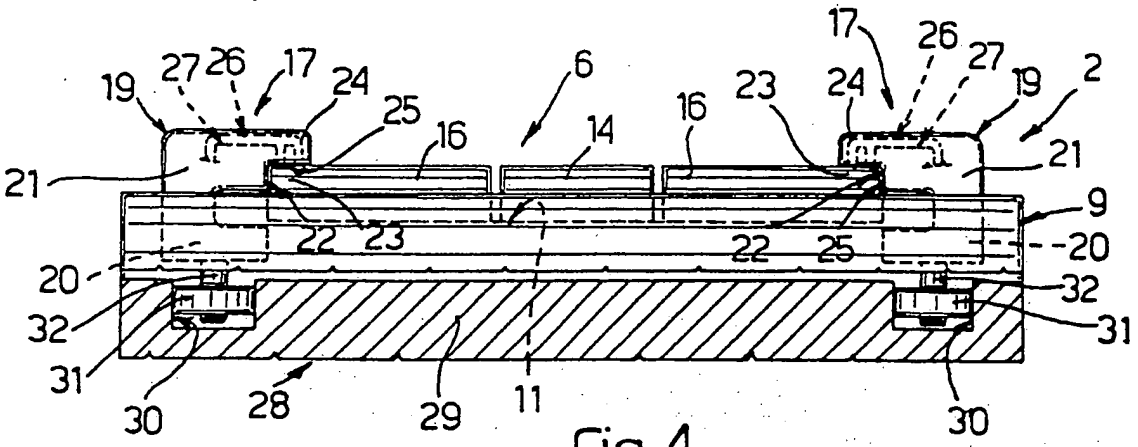

Fig.4

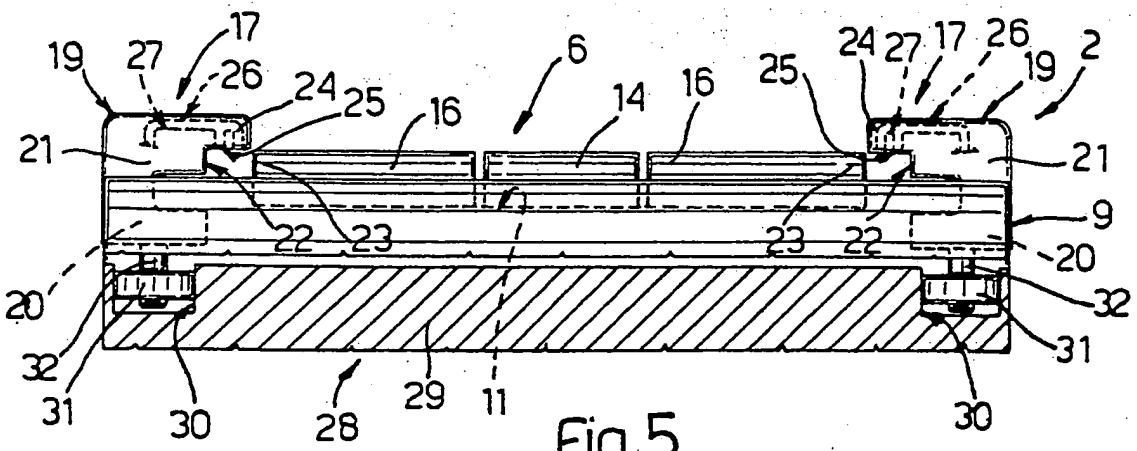

Fig.5

DEVICE FOR FORMING DOUBLE FILTER-TIPPED CIGARETTES ON A FILTER ASSEMBLY MACHINE

The present invention relates to a device for forming double filter-tipped cigarettes on a filter assembly machine.

Filter-tipped cigarettes are formed from a succession of double cigarette portions, which are cut transversely into two single portions, each pair of which is separated axially to define, in between, a gap into which a filter portion is inserted and joined at each end to the two cigarette portions to form a double filter-tipped cigarette.

Known filter assembly machines employ double filter-tipped cigarette forming devices whereby the single cigarette portions are produced by cutting the double portions transversely as they travel along a circular path defined by a first roller on which each double cigarette portion is housed inside a respective seat. Each seat is normally defined by two half seats for receiving respective single cigarette portions, and which are formed along the outer surface of a parting

unit comprising two coaxial slides. Each slide supports a respective half seat, and moves in relation to the other between a closed position, wherein the respective single cigarette portions are arranged contacting end to end, and a parted position, wherein said single cigarette portions are separated by at least the length of a double filter, i.e. a filter portion twice as long as the filter on the finished cigarette.

Known devices of the aforementioned type also comprise at least a second roller with a number of peripheral seats, each of which receives a pair of parted cigarette portions off the first roller, and feeds them to a loading station where the respective double filter is inserted.

On known devices of the aforementioned type, the second roller is indispensable, by virtue of the impossibility of feeding the double filters to a peripheral loading station on the first roller. When parted, in fact, a void exists between the half seats on the first roller, which thus lack a suitable supporting surface for the double filter, so that at least a second roller is required for completing the double cigarettes.

Consequently, known forming devices are invariably cumbersome and relatively expensive.

It is an object of the present invention to provide a double filter-tipped cigarette forming device enabling the second roller to be dispensed with if necessary.

According to the present invention, there is provided a device for forming double filter-tipped cigarettes on a filter assembly machine, the forming device comprising a number of seats, each designed to receive a respective double cigarette portion and feed it, transversely in relation to its axis, along a given path; cutting means located along said path, for cutting each double cigarette portion transversely into a pair of single portions; parting means for parting the single portions in each said pair parallel to said axis and between a closed position, wherein the single portions are arranged substantially contacting end to end, and a parted position, wherein the single portions define, in between, a gap of at least the same length as a double filter; and supply means for feeding a said double filter into each seat; characterized by the fact that each said seat is a continuous seat of at least the same length as a double cigarette defined by two said single portions and a double filter in between; and that, for each said seat, said parting means comprise at least one gripping element for engaging and moving a respective said single portion from said closed to said parted position; activating means being provided for moving the gripping element along the respective seat and between a first position, wherein the gripping element engages a respective single portion in said closed position, and a second position, wherein the gripping element is located outwards of the respective seat portion housing a

respective said double cigarette.

The above device preferably comprises a single roller defining said path; said seats being formed on the outer periphery, and parallel to the axis of rotation, of said roller.

According to a preferred embodiment of the above device, said parting means comprise, for each said seat, two gripping elements moving in opposite directions along the seat, and each engaging and moving a respective said single portion from said closed to said parted position; each said gripping element being connected to said activating means so as to move between a first position, wherein the gripping element engages a respective said single portion in said closed position, and a second position, wherein the gripping element is located outwards of the respective seat portion housing a respective said double cigarette.

A non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Fig.1 shows a schematic view of a portion of a filter assembly machine featuring a double filter-tipped cigarette forming device in accordance with the present invention;

Fig.2 shows a schematic side view, with parts removed for simplicity, of a detail in Fig.1;

Fig.s 3, 4 and 5 show details of Fig.2 in three different operating positions.

Number 1 in Fig.1 indicates a filter assembly machine comprising a device 2 for successively receiving double cigarette portions 4 off a supply roller 3 at loading station 5, and successively feeding double filter-tipped cigarettes 6 on to an output roller 7 at unloading station 8.

Device 2 comprises a hollow roller 9 rotating clockwise in Fig.1 about its axis 10, and substantially tangent to roller 3 at loading station 5, and to roller 7 at unloading station 8. Roller 9 presents a number of peripheral seats 11, each for receiving a respective double cigarette portion 4 and feeding it along a circular path P extending between loading and unloading stations 5 and 8, through a cutting station 12, and through a further loading station 13 located between stations 12 and 8 and which provides for successively feeding double filters 14 on to roller 9.

Seats 11 are equally spaced about the periphery of roller 9, and are continuous seats, each having an axial length at least equal to the length of double filter-tipped cigarette 6.

At cutting station 12, roller 9 is tangent to a rotary blade 15 by which each double cigarette portion 4 is cut transversely into two single portions 16 (Fig.s 2 to 5).

For each seat 11, device 2 comprises a parting unit 17 supported on roller 9 so as to travel with seat 11 along path P, and so as to move a respective pair of

single portions 16 axially in relation to each other and between a closed position (Fig.s 2 and 3) wherein portions 16 are arranged contacting end to end, and a parted position (Fig.s 4 and 5) wherein portions 16 are separated by a distance at least equal to the length of double filter 14.

At loading station 13, roller 9 is positioned tangent to a roller 18 for supplying double filters 14.

With reference to Fig.s 2 to 5, each parting unit 17 comprises a pair of gripping heads 19, each designed to engage a respective single portion 16, and each fitted in axially-sliding manner to roller 9 so as to travel parallel to seat 11. More specifically, each gripping head 19 is substantially C-shaped with its concavity facing the other head 19 on the same parting unit 17, and comprises a first portion 20 connected to roller 9 so as to move along the same parallel to seat 11; and a second portion 21 extending radially outwards of roller 9.

Second portion 21 presents a shoulder 22 defining an axial locator for end portion 23 of respective single portion 16; and an axial appendix 24 extending parallel to seat 11 and towards an axial appendix 24 on the opposite head 19. Each appendix 24 faces the outer surface of roller 9, and is separated from the bottom of seat 11 by a distance at least equal to the diameter of portion 16. Together with shoulder 22, each appendix 24 defines a seat 25 for partially housing end portion 23

of portion 16.

Each gripping head 19 also presents a retaining device 26 for releasably retaining end portion 23 of portion 16 inside seat 25.

Each device 26 comprises a conduit 27 extending at least partially through appendix 24, and communicating at one end with seat 25 and at the other end with a known suction device (not shown).

Again with reference to Fig.2, gripping heads 19 on each parting unit 17 are operated by a cam device 28 so as to move in opposite directions along seat 11 and between a first position (Fig.3) wherein each head 19 engages a respective end portion 23 of a respective portion 16, and a second position (Fig.5) wherein each head 19 is located outwards of an end portion of seat 11 and separated from the other head 19 by at least the length of double cigarette 6.

As shown in Fig.2, device 28 comprises a fixed drum 29 extending inside and coaxially with roller 9, and having a pair of circumferential cam grooves 30, each engaged in sliding manner by a tappet roller 31 mounted for rotation on a pin 32 extending radially inwards of roller 9 from portion 20 of a respective gripping head 19.

Grooves 30 are so designed as to maintain gripping heads 19 of each seat 11 in said second position as seat 11 travels between unloading station 8 and loading station 5. Upon double portion 4 being fed into seat 11

at loading station 5, gripping heads 19 are brought together by grooves 30 into said first position at cutting station 12, at which point, suction is produced along conduits 27 so that each gripping head 19 engages a respective single portion 16.

Downstream from cutting station 12, grooves 30 are so designed as to part gripping heads 19 and so axially part engaged portions 16 so that the respective facing ends of portions 16 are separated by a distance at least equal to the length of double filter 14. This is achieved prior to the passage of seat 11 through loading station 13, where a double filter 14 is inserted between portions 16, parted as described above, so as to form a double cigarette 6.

In connection with the above, it should be pointed out that each seat 11 may be provided, in known manner not shown, with a suction device which is disconnected or at least low-power operated as portions 16 are parted axially by respective gripping heads 19.

Finally, each double cigarette 6 is transferred on to roller 7 at unloading station 8, for which purpose, downstream from loading station 13, gripping heads 19 on each seat 11 are detached from respective portions 16 by eliminating (in known manner not shown) the suction along conduits 27, and are parted further by grooves 30 into said second position.

According to a variation not shown, each seat 11 presents a single gripping head 19, so that one portion

16 in each pair remains axially fixed, while the other is moved axially by a distance at least equal to the length of double filter 14.

CLAIMS

1) A device (2) for forming double filter-tipped cigarettes (6) on a filter assembly machine (1), the forming device (2) comprising a number of seats (11), each designed to receive a respective double cigarette portion (4) and feed it, transversely in relation to its axis, along a given path (P); cutting means (15) located along said path (P), for cutting each double cigarette portion (4) transversely into a pair of single portions (16); parting means (17) for parting the single portions (16) in each said pair parallel to said axis and between a closed position, wherein the single portions (16) are arranged substantially contacting end to end, and a parted position, wherein the single portions (16) define, in between, a gap of at least the same length as a double filter (14); and supply means (18) for feeding a said double filter (14) into each seat (11); characterized by the fact that each said seat (11) is a continuous seat of at least the same length as a double cigarette (6) defined by two said single portions (16) and a double filter (14) in between; and that, for each said seat (11), said parting means (17) comprise at least one gripping element (19) for engaging and moving a respective said single portion (16) from said closed to said parted position; activating means (28) being provided for moving the gripping element (19) along the respective seat (11) and between a first position,

wherein the gripping element (19) engages a respective single portion (16) in said closed position, and a second position, wherein the gripping element (19) is located outwards of the respective seat portion housing a respective said double cigarette (6).

2) A device as claimed in Claim 1, characterized by the fact that it comprises a single roller (9) defining said path (P); said seats (11) being formed about the outer periphery and parallel to the rotation axis (10) of said roller (9).

3) A device as claimed in Claim 1 or 2, characterized by the fact that, for each said seat (11), said parting means (17) comprise a pair of gripping elements (19) moving in opposite directions along the seat (11), and each engaging and moving a respective said single portion (16) from said closed to said parted position; each said gripping element (19) being connected to said activating means (28) so as to move between a first position, wherein the gripping element (19) engages a respective said single portion (16) in said closed position, and a second position, wherein the gripping element (19) is located outwards of the respective seat portion housing a respective said double cigarette (6).

4) A device as claimed in any one of the foregoing Claims, characterized by the fact that each said gripping element (19) is fitted in axially-sliding manner to said roller (9) so as to move parallel to said

seat (11).

5) A device as claimed in any one of the foregoing Claims, characterized by the fact that said activating means (28) comprise cam means (29) fixed in relation to said roller (9); and a number of tappet elements (31), each secured to a respective gripping element (19) and cooperating with said cam means (29).

6) A device as claimed in any one of the foregoing Claims, characterized by the fact that each said gripping element is defined by a gripping head (19) having a shoulder (22) defining an axial locator for an end portion (23) of the respective said single portion (16), and at least one appendix (24) extending parallel to said seat (11) and separated from the bottom of said seat (11) so as to define, with said shoulder (22), a seat (25) for at least partially housing said end portion (23) of said single portion (16).

7) A device as claimed in Claim 6, characterized by the fact that each said gripping head (19) comprises retaining means (26) for releasably retaining the end portion (23) of a respective said single portion (16) inside said seat (25).

8) A device as claimed in Claim 7, characterized by the fact that said retaining means (26) are pneumatic, and comprise a conduit (27) communicating at one end with said seat (25) and connectable at the other end to a suction device.

9) A device for forming double filter-tipped

cigarettes on a filter assembly machine, substantially as described and illustrated herein with reference to the accompanying drawings.

Patents Act 1977
Examiner's report to the Comptroller under Section 17 (The Search Report)

Application number

GB 9226184.1

Relevant Technical fields

(i) UK Cl (Edition L) A2C CGMA, CGMB, CGMC, CGMX

(ii) Int Cl (Edition 5) A24C 5/52

Search Examiner

M ELLIOTT

Databases (see over)

(i) UK Patent Office

(ii)

Date of Search

11 MARCH 1993

Documents considered relevant following a search in respect of claims 1-9

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
	NONE	

Category	Identity of document and relevant passages	Relevant to claim(s)

Categories of documents

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